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DEVELOPMENT OF METHODS FOR GROWING YOUNG DAIRY GOATS OF THE SAANEN BREED

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Abstract: To increase the marketability of whole milk and increase the live weight of young goats, we recommend using artificial rearing of Saanen goats on a whole milk substitute from 5 days of age with the inclusion of 3% sugar and 1% probiotic.

Key words: goat feeding, dry matter, organic matter, whole milk substitutes, dynamics of live weight of goats.

Relevance of the topic. Today in Kazakhstan there is an urgent issue of ensuring the production of environmentally friendly livestock products for dietary and baby food, including goat milk. Goat milk is superior in its valuable qualities to other types of milk from farm animals, and in connection with this there is a need to increase the production of commercial milk and its use in nutrition.

Therefore, studying the influence of various methods of raising young goats on the growth and development and milk productivity of queens is a very pressing problem of significant scientific and practical interest.

Purpose and objectives of the research. The purpose of the research was to develop a method for raising young dairy goats of the Saanen breed, increasing the marketability of whole milk and the efficiency of dairy goat farming.

Scientific novelty of research. New experimental data have been obtained on various methods of raising young dairy goats on whole goat milk and whole milk substitutes.

Materials and research methods

Scientific and economic experiments to study the influence of various methods of raising Saanen goats on their productivity were carried out at the Saraishyk Breeding Farm LLP.

The scientific and experimental part of the work was carried out in the Saraishyk laboratory - a plant for the production of milk and dairy products from goat milk.

During the goat season, 40 goats were selected, from which they were formed

4 similar groups: I-control group was kept on suction under the uterus, II-experimental group was fed artificially with whole goat milk, III-experimental group - with a whole milk substitute (recipe No. 1), IV-experimental group - with a whole milk substitute (recipe No. 2).

Research results According to the research methodology, the main diet of the experimental groups of animals was as follows: until the age of 5 days, the goats received colostrum from their mothers, from the age of 6 days they were accustomed to eating cereal and forb hay in the form of suspended bunches, concentrated feed (barley turf 35%, wheat 22%, pea 20%, oats 15%, sunflower meal 7%, premix - 1%) and mineral feed (table salt, chalk) along with the use of whole milk and whole milk substitutes in accordance with their age and development.

Thus, during the growing period, per 1 head, the goats of the control group consumed: 99.21 kg of milk, 12.30 kg of concentrates, 20.19 kg of hay, experimental group II – 95.60, 12.51, 22 .77 respectively; consumption of the substitute in experimental groups III and IV was 96.6 and 96.9 kg, concentrates 12.15 and 12.57 kg, hay – 22.44 and 23.16 kg.

Digestibility of nutrients in diets. Based on the results of a physiological experiment on digestibility and metabolism conducted on goats of experimental groups at 2.5 months of age, digestibility coefficients were determined (Table 1).

Table 1. Digestibility of nutrients in goat diets, %

Index	Group of animals		
	II-experienced	III-experienced	IV-experienced
Dry matter	81,02±0,95	76,94±1,29	78,85±0,78
Organic matter	82,33±0,91	78,49±1,28	80,34±0,77
"Raw" protein	79,79±0,82	75,72±1,34	76,76±1,39
"Raw" fat	72,18±0,91*	65,05±1,08	65,32±1,52
"Raw" fiber	56,27±1,40*	44,43±1,13	48,18±0,44
BEV	89,16±0,61	86,73±1,10	86,70±1,18

Note: * $P < 0.05$

From the data in Table 1 it follows that animals of experimental group II had a higher ability to digest and assimilate nutrients from diets and exceeded peers of groups III and IV in digestibility of dry matter by 4.08 and 2.17%, organic matter by 3. 84 and 1.99%, protein - by 4.07 and 3.03%, fat - by 7.13 and 6.86% ($P < 0.05$), fiber - by 11.84 and 8.09% ($P < 0.05$), BEV - by 2.43 and 2.46%. The digestibility of nutrients in the goats of experimental group IV was slightly higher than in group III, which is obviously due to the inclusion of sugar in the whole milk substitute, which helps to increase the cellulolytic activity of microorganisms.

The animal body meets its need for protein with feed protein. In this regard, taking into account the supply of nitrogen with food through its excretion in urine and feces, our studies established nitrogen metabolism in its quantitative terms (Table 2).

Table 2. Balance and use of nitrogen by experimental animals, g/animal

Index	Group of animals		
	II - experienced	III - experienced	IV - experienced

Taken with food	12,62±0,12	12,24±0,19	12,22±0,18
Excreted in feces	2,55±0,10**	2,98±0,21	2,82±0,21
Excreted in urine	3,50±0,11	3,51±0,04	3,29±0,13
Deposited in the body	6,57±0,28**	5,75±0,03	6,11±0,16
in % of ingested in % of digested	52,05±1,05	46,98±0,56	50,08±1,47

Note: ** P < 0.01

Animals of the second group transformed feed nitrogen most productively, in which nitrogen deposition in the body was the highest and amounted to 6.57 g or higher by 12.48 (P < 0.01) and 7.00% than in animals of the third and fourth groups grown on whole milk substitutes. Nitrogen deposition in the body of animals of the third group was 46.98% in relation to that taken with food, which is less than that of the animals of the second and fourth groups by 5.07 and 3.10%.

In our opinion, the high deposition of nitrogen in the body of goats is due to the fact that in the experiment the animals were in the process of growth, and tissue growth in young animals is predominantly of a protein nature.

Animal growth and development. To study the growth of goats during the dairy period, we compared the increase in live weight of goats raised on suction under the uterus, as well as as a result of artificial feeding of whole goat milk and its substitutes. These changes in live weight are shown in Table 3.

Table 3. Dynamics of live weight of goats

Age, day	Group			
	I - control	II - experienced	III - experienced	IV - experienced
	live weight, kg			
At birth	3,16±0,17	3,14±0,16	3,14±0,13	3,17±0,16
30	7,63±0,31	9,52±0,59**	7,01±0,41	7,45±0,45
60	13,53±0,48	15,80±0,34***	13,20±0,64	14,00±0,62
90	17,70±0,70	22,40±0,49***	18,20±0,84	20,05±0,69*

Note: * P < 0.05; ** P < 0.01; *** P 0.001

The animals of the second and fourth experimental groups had the highest growth rate by the age of 3 months, and the control group had the lowest. Thus, the live weight of goats of the II experimental group at the end of the experiment was 22.40 kg, which is 4.7 kg, or 26.55% more than in the control group (P < 0.001). In the third group, the live weight was higher than in the control group by 0.5 kg or 2.82%, in the fourth by 2.35 kg or 13.28%, with statistical reliability (P < 0.05). This superiority of live weight in goats grown artificially in comparison with their peers kept on suckling is explained by the fact that the animals received first colostrum, and then milk and whole milk substitutes at a strictly defined time and in accordance with their growth and development. The dynamics of

average daily increases indicates an uneven increase, both by months of cultivation and by groups of animals (Table 4).

Table 4. Dynamics of average daily live weight gains of goats, g/head.

Group	Age, days			From birth to 3 months	
	0-30	30-60	60-90	g	%
I	149,0±5,65	196,6±6,53	139,0±9,65	161,5±5,87	100,00
II	212,6±13,15**	209,3±11,48	220,0±9,87***	214,0±5,30***	132,50
III	129,0±12,35	206,3±10,72	166,6±9,67	167,3±8,04	103,59
IV	142,6±3,59	218,3±6,87*	201,6±3,89***	187,6±5,97**	116,16

Note: * $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$

Over the entire growing period, the average daily gains of animals of the compared groups allow us to conclude that in all groups the animals had fairly high live weight gains, however, the maximum average daily increase was observed in the second experimental group and amounted to 214.0 g. The minimum average daily increase in live weight was noted in the control group – 161.5 g, which is lower than in the second by 32.51% ($P < 0.001$) and the third and fourth groups by 3.59% and 16.16% ($P < 0.01$), respectively.

Thus, the profit received confirms the economic benefits of growing goats artificially on whole milk substitutes from the age of 5 days, which contributes to obtaining more products and increasing the level of profitability.

Conclusion

Based on the conducted studies on the productivity of goats of the Zaanen breed with various methods of cultivation, the following conclusions can be drawn: the use of developed recipes for whole milk substitutes when growing goats increases the concentration of total protein by 5.0 and 5.5%, does not adversely affect the hematological picture, but on the contrary, improves the morpho-biochemical composition, increasing the degree of saturation erythrocytes with hemoglobin by 7.41%, contributes to an increase in the content of calcium, phosphorus and magnesium in the blood serum to 8.50%; 4.38 and 6.22% ($P < 0.05$), which is very important for growing animals.

The growth energy of young goats of the experimental groups is associated with high coefficients of digestibility of the nutrient complex. Thus, animals of group II in terms of digestibility of dry matter exceeded peers of groups III and IV by 4.08 and 2.17%, organic matter – by 3.84 and 1.99%, protein – by 4.07 and 3.03, fat – by 7.13 and 6.86% ($P < 0.05$), fiber – by 11.84 and 8.09% ($P < 0.05$), BEV – by 2.43 and 2.46%. There were no significant differences in body measurements in animals of the control and experimental groups. Young animals raised on a whole milk substitute with sugar inclusion have a slight superiority over animals kept on suckling in terms of such indicators as height at the withers by 1.73%; chest width by 4.41%; chest depth by 2.90%; chest girth behind the shoulder blades by 2.04%.

It was found that animals of the experimental groups raised on whole milk and whole milk substitute with sugar inclusion had a higher ability to transform feed into products.

They spent 0.86 and 0.49 less feed units per 1 kg of body weight gain, or 24.50% and 13.96%, respectively, than the young of the control group.

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